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NOTES FROM PACIFIC COAST OBSERVATORIES.

THE NEW STAR IN *LACERTA*.

This new star, which is the brightest of its class that has appeared for a number of years, was discovered by ESPIN. From the Harvard photographic records it has been found that no star was visible in this spot on a plate taken on November 17th, but is shown on plates taken on November 23d and December 7th. At this time it was quite bright, its photographic magnitude being 5.00. By the first of January it had diminished in brightness till its visual magnitude was 7.1.

Three plates taken at Harvard College Observatory on August 7, 1907, August 22, 1909, and August 24, 1909, show a faint star of about the fourteenth magnitude in the exact position now occupied by the Nova, and it is probable that some outburst in this faint star gave rise to this sudden increase in brilliancy equivalent to about four thousand times the light of the star as it existed before the outburst.

Three plates with the Crossley reflector, one of which has three images of the Nova, gave as the position of the Nova for 1910.0—

$$\alpha = 22^{\text{h}} 32^{\text{m}} 9^{\text{s}}.18; \delta = +52^{\circ} 15' 2''.3.$$

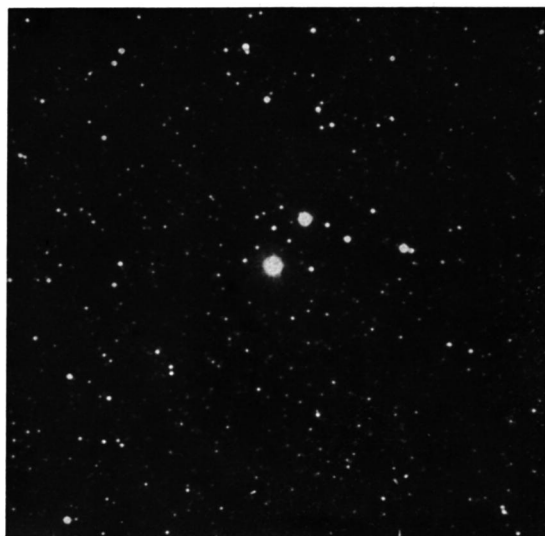
The cut shown is from a negative with the Crossley reflector made on the night of January 2, 1911, with an exposure of three hours and forty minutes.

H. D. CURTIS.

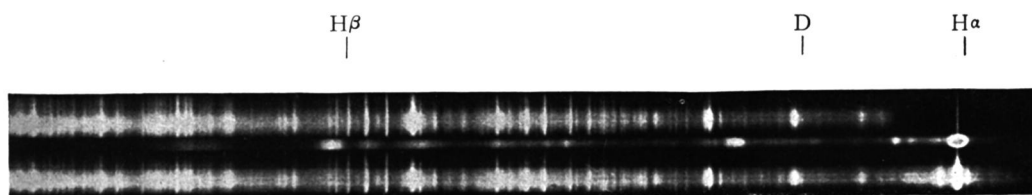
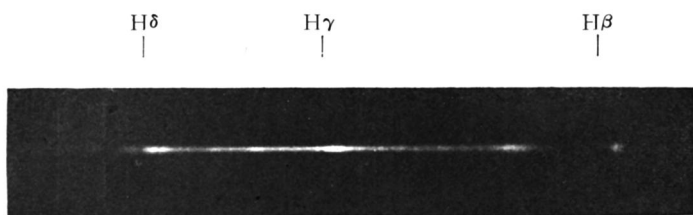
THE SPECTRUM OF *NOVA LACERTÆ*.

The two slides* show the spectrum of *Nova Lacertæ* as photographed at the Lick Observatory on December 31st and January 1st. The first plate covers the so-called photographic

*Shown at the meeting of the Society held in Berkeley on January 28th.



REGION ABOUT *NOVA LACERTÆ*.
Crossley Reflector, Jan. 2, 1911; Exposed 3h 40m.



PHOTOGRAPHS OF THE SPECTRUM OF *NOVA LACERTÆ*.

SC 1712

region of the spectrum between the wave-lengths 400 and 500 Ångströms, and was secured with a single-prism spectrograph attached to the 12-inch telescope. The second spectrogram was made on a photographic plate specially sensitized for the visual region of the spectrum, and records between wave-lengths 470 and 660 Ångströms. It was made with a spectrograph attached to the 36-inch refractor.

The photographs show the spectrum of the new star to involve the same features which characterized those of *Nova Aurigæ* and *Nova Persei* in the earlier stages of their developments. The principal hydrogen lines are represented by composite bands consisting, in each case, of a broad bright band accompanied on its more refrangible side by a dark one. This phenomenon, when observed, for the first time, in *Nova Aurigæ*, was held by some astronomers to be due to the superposition of two spectra containing bright and dark lines respectively, the stellar sources of which had enormous relative velocities in the line of sight. The improbability of this explanation is established by the fact that in every case in which we have been able to observe the phenomenon, the dark lines are displaced toward the region of shorter wave-lengths, a fact which would indicate, were the explanation correct, that the component giving the bright line spectrum is always moving away from the Earth and the other toward it. This would show a most remarkable symmetry, with respect to the Earth, in the action of the great forces of nature, a conception more in harmony with the scientific notions of the philosophical astronomers of Greece than with those obtaining among astronomers of to-day. We have not as yet a well-established theory to account for the numerous and complicated phenomena presented by the spectra of new stars.

In addition to the hydrogen bands already referred to, the spectrum contains many other bright radiations, easily visible on the slides, some of which appear to have a structure similar to that of the hydrogen bands. In all, some thirty-seven bright lines and bands have been counted.

As yet the spectrum has not entered the "nebular stage,"—that is, the bands corresponding in position with the radiations characteristic of the gaseous nebulae have not become pronounced features of the spectrum. There may be one excep-

tion to this statement, in the case of the strong band in the yellow which is possibly identical with the nebulae line at λ 575. Judging by the history of objects of this class, however, there should be little hesitancy in venturing the opinion that within a year the spectrum will be completely transformed and will develop the radiations, so closely related to those of the gaseous nebulae, which are characteristic of new stars in the secondary periods of their existence.

W. H. WRIGHT.

MOUNT HAMILTON, January 23, 1911.

NOTES ON THE D. O. MILLS EXPEDITION TO THE SOUTHERN
HEMISPHERE.

In December, 1900, the late Mr. D. O. MILLS made generous provision for an expedition from the Lick Observatory, University of California, to the southern hemisphere, with purpose to observe the radial velocities of the brighter stars in the southern sky. The plans called for observations covering two years, following the completion of the observing station. A description of the observatory located on the summit of San Cristobal, Santiago, Chile, has been given in the *Publications* of the Society, and need not be here repeated.

During the first period of observation the expedition, in charge of Astronomer W. H. WRIGHT, observed with great accuracy the radial velocities of about one hundred and fifty stars south of declination -30° . The results have been in manuscript form nearly three years, but there have been no funds in the State Printing Office to publish them. Publication is now proceeding through the University Printing Office on the basis of funds generously supplied for this purpose by Mrs. HEARST.

Early in the year 1905 Mr. MILLS provided for a further period of observation covering five years, 1906-1911. The adopted program for this period included observations of additional bright stars with a 3-prism spectrograph, and of fainter stars with a 2-prism spectrograph. This period of observation is near its close. Astronomer HEBER D. CURTIS was in charge of the expedition during the years 1906-1909, and Astronomer JOSEPH H. MOORE has been in charge since June, 1909.